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No. 886

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USSR REPORT

ECONOMIC AFFAIRS

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CONTENTS

SOVIET ECONOMIC POTENTIAL DISCUSSED

Moscow KRASNAYA ZVEZDA in Russian 20 Jun 79 p 2

[Letter from V. Shumskiy, Ensign in the Guards, and reply by Lt Col V. Zolotarov, candidate of economic sciences: "Our Economic Potential"]

[Text] One frequently encounters in the press such an expression as the state's economic potential. Can you explain what this means? Say, for example, of our Soviet state.

Guards Ensign V. Shumskiy

First of all let me discuss the concept. In the modern political lexicon potential (this word comes from the Latin potentia -- power, force) means the degree of something's capacity in some respect, the totality of means, conditions and sources that are available and can be mobilized in order to achieve one goal or another or to solve one problem or another. The economic potential is the degree of the state's capacity (or that of the union or coalition of states) in the economic sense. It includes those available capabilities which it can realize in order to provide for the material needs of the life of the society in a given stage of its development, including those needs which arise if the state finds itself in extraordinary circumstances, for example, at war.

How is this potential determined? Above all by the quantity and quality of productive forces at the disposal of the society. The greater their volume and the higher their level, the greater the growth rates and capabilities of public production, the more significant the state's economic potential is.

Another no less important aspect is the nature of production relations within whose framework the development of productive forces takes place, the socio-economic and political structure of the society. Capitalism cannot provide for stability of economic development or complete utilization of available labor force or production capacities. But for socialism, which has put an end to the curse of an exploitative society, it is typical to have a permanent, continuous and planned process of expanded reproduction with stable and high rates of economic growth. The economic capabilities are not the

the same for a socialist and a capitalist state which have similar volumes and levels of productive forces. They are greater in the socialist state.

A typical example. During the years of the Great Patriotic War the Soviet Union had a smaller heavy industry base than fascist Germany did. Our average annual steel production, for example, amounted at that time to 11.3 million tons while in Germany and the countries it occupied the volume was 33.4 million tons. Nonetheless we managed to produce 1.3 times as many military aircraft, 1.8 times as many tanks, self-propelled guns and weapons, and 5 times as many mortars as the enemy did.

When speaking of a state's economic potential it is important to keep in mind the goals for which it is used. Under the conditions of capitalism it is placed in the service of the exploiting classes who use it as a means of obtaining fabulous profits, fighting for sources of raw material and the market for selling prepared products, gaining control over developing countries and exerting pressure on the countries of the socialist community. Under socialism the economic potential serves the interests of the workers and is directed toward ever more fully satisfying their needs and demands, toward ensuring the economic independence and defense capabilities of the state, strengthening the socialist community and rendering fraternal assistance to developing countries.

And now let us look at what our state's present economic potential is and how it is formed. It is known that the Soviet regime received a poor technical and economic legacy from the old order. The six-plus decades since the October Revolution have changed the country's face to the point of being unrecognizable and brought it into the vanguards of economic and scientific-technical progress. "Never before," emphasized Comrade L. I. Brezhnev when speaking at the November (1978) Plenum of the CPSU Central Committee, "has a country had such a great economic potential, developed to such a degree by industry, science and technology." And indeed while in 1913 Russia produced only a little more than 4 percent of the world industrial output and in 1917 we produced even less than 3 percent, now we produce one-fifth of it.

Immense changes have taken place in all components of the state's economic potential. Let us discuss a few of them.

Labor Resources

Our country, as we know, is one of the most populous countries in the world. The number of residents has increased from 159.2 million in 1913 (estimated using the current borders) to 262.4 million (according to data from the census of 17 January 1979). Of course there has also been a considerable increase in the numbers of able-bodies population. And since we eliminated unemployment long ago, practically all these people are engaged in socially useful labor -- they work, study, serve in the army and navy, or are employed in homemaking. Last year, for example, the average annual number of workers and employees in the national economy amounted to 108.5 million

and the number of kolkhoz workers employed in public business on kolkhozes was 14.2 million.

There has also been significant change in the qualitative level of labor resources. Before the revolution illiteracy among workers and peasants was a common phenomenon. Now we are a fully literate country and more than three-fourths of the workers employed in the national economy have a higher or secondary (complete or incomplete) education. The number of specialists with higher and secondary specialized education has increased considerably. While on the eve of the First Five-Year Plan there were 521,000 of them, at the beginning of this year there were 26.4 million.

Production Apparatus of the National Economy

First of all this includes fixed production capital, that is, production buildings and structures, power and manual machinery, equipment, means of transportation and so forth. Their value has reached an astronomical figure here -- more than 1 trillion rubles, which is 14 times that which we had in prewar 1940 and 37 times that which prerevolutionary Russia had in 1913. Additionally, the quantitative growth of this capital has been accompanied by a steady improvement in its qualitative makeup and technical and economic characteristics.

The existence of such a mighty production apparatus has expanded the country's economic capabilities enormously. Last year, for example, industry needed only 3 days to produce as much output as was produced during all of 1928. This is an average. And in order to produce the means of production (group A) produced during all of 1928, today's industry would need even less time -- 1.3 days. The volume of cargo turnover in all kinds of transportation that was reached in 1928 was accomplished last year in only 7 days.

These figures convincingly tell of the technical supply for agriculture: At the end of last year agriculture had 2.53 million tractors, 1.563 million trucks and 700,000 grain combines. And a half century ago these figures were 27,000, 700 and 2, respectively.

All this, of course, required immense capital investments. As the country's economic capabilities expand their overall volume has constantly increased. While, say, under the First Five-Year Plan capital investments in facilities for production purposes in industry amount to 3.3 billion rubles and under the Fourth Five-Year Plan, 18.4 billion, under the Ninth Five-Year Plan these investments amounted to 173.2 billion rubles. It is typical that in terms of the growth rates of capital investments, our country appreciably surpasses the more developed capitalist powers. As a result, we accumulate fixed capital more rapidly. During the period of 1951-1976 the Soviet Union needed only 8 years to double them while the United States required about 20 years.

Fuel and Raw Material Base

The Soviet Union has considerable supplies of coal, combustible shale, natural gas, petroleum and other minerals, practically half of the world's supplies of hydro-electric power and immense timber resources. This makes it possible for us to bring significant quantities of raw materials, fule and processed materials into economic circulation each year. Thus in 1978 the country extracted 572 million tons of petroleum (including gas condensate), 372 billion cubic meters of gas, 724 million tons of coal and 244 million tons of iron ore. The consumption of material resources, valued in 1975 at 500 billion rubles, will increase by the end of the five-year plan to 600-650 billion rubles.

Scientific and Technical Progress

In 1978 the Soviet Union had 1,307,000 scientific workers or one-fourth of all the scientific workers in the world and expenditures on science and technology amounted to 19.3 billion rubles. This alone shows the immense significance we attach to problems of scientific and technical progress. Soviet science has advanced to leading positions in the world in a number of areas. Its integration into production has become greater. The creation of scientific production associations contributed particularly to this. The scope of the introduction of scientific and technical achievements into the national economy has expanded. Now three-fourths of all the increase in labor productivity is achieved precisely as a result of scientific and technical progress.

These are a few of the components of our economic potential. It is not difficult to see the new and even more spectacular prospects which are opened up for a country of developed socialism from the heights it has already achieved in the area of economic construction. At the 25th CPSU Congress, for example, it was stated that the material and financial resources of the USSR will approximately double as compared to the preceding five-year plan, according to preliminary calculations. This will be an important step forward in the creation of a material and technical base for communism and in the rise of the standard of living of the Soviet people.

The party teaches us that further increase in our state's economic potential lies on the path of ever greater intensification of the national economy since the role of other growth factors is sharply decreasing. For instance, the possibilities of expansion of production through increasing the number of workers have already been practically exhausted. This is why under the current five-year plan and in the future the party is relying on increasing labor productivity, increasing the efficiency of public production, improving the quality of the work, rationally utilizing fixed capital and accelerating scientific and technical progress.

The Soviet people are well aware that economics is the major field of competition between the two social systems. Unanimously approving and supporting the party's policy, they are persistently struggling for fulfillment of the assignments of the Tenth Five-Year Plan and for further strengthening of the economic and defense might of the homeland.

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CSO: 1820

UKRAINIAN INDUSTRIAL COMPLEXES EXAMINED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 1 Jul 79 p 2

[Article by V. Dobrik, first secretary of the L'vovskaya Obkom of the Communist Party of the Ukraine: "Interbranch Complexes"]

[Text] The decisions of the 25th CPSU Congress emphasize that practical introduction of new scientific ideas is today a no less important task than their development. The need in all ways to expand and deepen the ties between fundamental and applied research and production is clear and understood by everyone. The difficulty consists in something else, in the comprehensiveness and the multiple planning of national economic tasks which cannot be resolved by individual people or even individual collectives. These tasks are developed on the scale not only of the entire country, but also of the individual region, republic, kray and oblast.

As we know, in these regions there is no agency which could solve problems of interbranch administration of science and technology. Therefore these tasks are taken on by party committees who coordinate and direct the activity of scientific and production collectives. In 1976 the bureau of the oblast party committee approved a comprehensive plan for the development of science and the promotion of scientific and technical progress in the oblast during the Tenth Five-Year Plan. This was developed by the Western Scientific Center of the Ukrainian SSR Academy of Sciences and the council of rectors of the L'vov VUZ Center. It is being implemented successfully for the most part. This is mainly because we managed to coordinate the activities of academic and branch scientific research institutions, higher educational institutions and production enterprises.

Experience in combining science with production in our country, particularly in the Ukraine, has shown that one of the effective forms of planning and management of the development of science and scientific and technical progress as a whole is the special purpose program approach. At its basis lie comprehensive programs which are directed toward obtaining final practical results that are related to the realization of the achievements of science and technology.

Under the leadership of party agencies, through the joint efforts of scientists and production workers, we managed to form 12 regional interdepartmental special-purpose scientific and technical programs.

It is natural that the formation and implementation of these programs must be ensured by a well-arranged organizational system which eliminates departmental barriers between enterprises and research collectives. Our basis for this system was comprised of interdepartmental special-purpose scientific production associations. They are created temporarily, for the period in which they are needed, in order to resolve the national economic tasks set for them. There were 12 comprehensive programs and 12 associations.

More than 60 scientific research and planning-design institutions, VUZ's, production enterprises and organizations were enlisted to participate in these associations.

The association's agreement, provisions and scientific and technical program determine the rights and responsibilities of each participant, the volume and nature of their work, and the sequence and time periods for dealing with individual subjects. Plans that envision scientific research under the program, experimental industrial testing, and introduction are drawn up for 1 year. They make it possible to carry out integral planning of the jobs and arrange financing, and they guarantee the priority of results in the interdepartmental system of "scientific research institution -- design bureau -- enterprise."

The scientific and technical council directly guides the association's activity. It provides special-purpose scientific and technical guidance of developments, solves problems related to material and scientific-technical support, and organizes the scientific and technical seminar and work conferences under the program. Joint laboratories are created, which include scientists and production workers.

Enterprises and organizations included in the association conclude economic agreements for 3-5 years, coordinate their efforts, and exchange information at scientific and technical seminars, work meetings and conferences.

The implementation of the comprehensive program is supervised by scientific and technical councils of the associations, the bureau of the Western Scientific Center of the Ukrainian SSR Academy of Sciences and managers of branch divisions of party obkoms.

Participation in the association does not disturb the production and economic structure or the departmental jurisdiction of the collectives that are included in it and it does not change their production and economic functions.

But associations are not the only form of management of scientific and technical progress which we utilize. There are enterprises of various departments functioning in the region which have similar scientific and technical problems. There logically arises a need for more extensive interbranch scientific and technical cooperation. On this level one can solve such problems as mutual exchange of developments, acceleration of the introduction of

the [illegible] of time and [illegible] of a unified [illegible] policy at enterprises of the region. Therefore we have decided to merge associations with similar profiles into large interbranch scientific production complexes. There are four of them in the L'vov area: instrument building, machine building, geological-geographic and agricultural.

A system for managing the complexes has also been created. Each in turn is headed by a board which includes representatives of party and state organs of the region, representatives of scientific and technical councils of the associations, directors (or their deputies) of head scientific research institutes which coordinate the development of the programs, directors or chief engineers of head design and production organizations, and chairmen of branch scientific and technical societies.

Interdepartmental special-purpose scientific and production associations and the complexes that are formed on the basis of this have existed for a relatively short period of time, but [illegible] have shown [illegible] their advantages. In the process of joint work on the implementation of scientific and technical programs, steady collectives of scientists and production workers of various areas and branches are formed and joined together by a single purpose. For example, not only physicists, mathematicians and chemists, but also economists, sociologists and psychologists participated in the research on the problem of the "Quality of carbide tip instruments."

The first projects for regional special-purpose comprehensive programs or their final stages have already been completed. Among them are the development, design and the introduction of an automated control system for product quality (ASUKP) at the Kinoskop Production Association. The program special-purpose approach made it possible to reduce the time for the development of the system considerably and to introduce individual innovations even before all of the work was completed.

Interdepartmental associations and complexes help to surmount departmental barriers more rapidly. Each enterprise, as a full-fledged member of the scientific and production community, can display more initiative. It can submit an application for the solution of a problem without going through intermediate authorities: directly to its general coordinator — the association's scientific and technical council. And this, in turn, can rapidly mobilize the capabilities of participants in the cooperation.

At the L'vov diamond instrument plant, for example, there arose a problem with the durability of the block-matrices for synthesizing artificial diamonds. The scientific and technical council enlisted specialists from the physics and mechanics institute of the Ukrainian SSR Academy of Sciences and the L'vov Polytechnical Institute in the work. Through their joint efforts the problem was successfully solved and in one quarter the new matrix was introduced at the plant. The economic effect amounts to 150,000 rubles a year. They are now considering the problem of introducing this development at enterprises of the All-Union Soyuzalmazinstrument Association.

One could give other examples of fruitful ties between research institutions and production collectives. The economic effect from the introduction of scientific developments in the oblast during the years of the Tenth Five-Year Plan increased by 20 percent as compared to the annual average under the Ninth Five-Year Plan and amounts to about 80 million rubles a year.

The new form of management of scientific and technical progress requires active participation from the public. Conferences of secretaries of party organizations of scientific and production collectives that are part of the association have become a stable part of life and the practice of joint work. Participants in them consider the course of the implementation of special-purpose programs and develop plans for the dissemination of advanced practice and scientific and technical publicity.

Trade-union committees of enterprises and organizations that are parts of the association develop joint socialist commitments in connection with the assignments under comprehensive programs and supervise their fulfillment. Scientific and technical societies create interbranch creative collectives and prepare creative plans. The bureau of the party oblkom at the beginning of this year adopted a decree which approved the suggestions from the oblast trade-union council regarding the organization of socialist competition among associations and complexes. Komsomol youth collectives are doing useful work in the complexes.

The results we have obtained convince us that the correct path has been taken. But not all of the possibilities have been utilized yet. In our opinion, interbranch complexes could participate in working out long-range plans for the development of science and technology in the region and in searches for new and better forms of regional planning of scientific and technical progress.

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CSO: 1820

SIBERIAN INDUSTRIAL DEVELOPMENT DURING PRECEDING FIVE-YEAR PLANS

Novosibirsk IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR - SERIYA OBSHCHESTVENNYKH NAUK in Russian No 1, Jan 79 pp 28-33

/Article by T. B. Baranova, Institute of Economics and the Organization of Industrial Production of the Siberian Department of the USSR Academy of Sciences (Novosibirsk): "The Main Indicators of Siberian Industrial Development During the Seventh-Ninth Five-Year Plans"/

/Text/ The most important factor of the economic development of Siberia is the availability here of major and, as a rule, economical raw material, fuel, power and water resources. However, their development is being checked by the lack of labor resources and several other factors. Industrial production plays the leading role in the economy of Siberia: it provides more than 70 percent of the gross product of the region. The share of Siberia in USSR industrial production in 1975 was 8.8 percent. On a per capita basis in Siberia the production of the gross production of industry was 12 percent greater than on the average for the USSR.

During the period 1961-1975 the industrial production of Siberia on the whole was developed more rapidly than all-union industry.[1] In 15 years the production of the sectors of heavy industry (except for machine building, the chemical industry and the construction materials industry), as well as light industry increased to a greater extent than on the average for the USSR (Table 1). The outstripping of the growth rate of Siberian industry was mainly the consequence of the accelerated development of the sectors of raw material specialization: the fuel industry, the timber and wood processing industry, nonferrous metallurgy. Unlike the all-union trend, the growth rates of the gross production of the extractive and processing industries of Siberia during the Ninth Five-Year Plan were approximately identical.

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1. B. P. Orlov, "Problems of the Retrospective Analysis of Siberian Economic Development," IZVESTIYA SIBIRSKOGO OTDELENIYA AN SSSR - SERIYA OBSHCHESTVENNYKH NAUK, issue 3, No 11, 1977, p 87.

Table 1

Growth of Gross Industrial Production

(1) Отрасль промышленности	(2) 1975 г. в % к 1960 г.		(3) Среднегодовой темп прироста, %	
	(4) Сибирь	(5) СССР	(4) Сибирь	(5) СССР
Электроэнергетика (6)	562	419	11.4	10.0
(7) Топливная	362	222	8.4	5.4
Черная металлургия (8)	247	374	5.8	9.2
(9) Химическая и нефтехимическая	669	726	12.6	14.1
(10) Машиностроение и металлообработка	483	631	10.0	12.9
(11) Лесная	230	191	5.7	4.4
(12) Промышленность стройматериалов	324	360	7.8	8.9
(13) Легкая	291	223	6.9	5.5
Пищевая (14)	217	221	5.1	5.4

Key:

1. Sector of industry
2. 1975 as a percentage of 1960
3. Average annual growth rate, percent
4. Siberia
5. USSR
6. Electric power engineering
7. Fuel
8. Ferrous metallurgy
9. Chemical and petrochemical
10. Machine building and metal-working
11. Timber
12. Construction materials industry
13. Light
14. Food

Note: Tables 1-9 were calculated by the author using the reference works: "Narodnoye khozyaystvo SSSR v 1975 godu. Statisticheskiy yezhegodnik" /The USSR National Economy in 1975. A Statistical Yearbook/, Moscow, "Statistika", 1976, pp 190-191, 196-197, 204-209, 212-214, 221-222; "Narodnoye khozyaystvo SSSR v 1965 godu. Statisticheskiy yezhegodnik" /The USSR National Economy in 1965. A Statistical Yearbook/, Moscow, "Statistika", 1966, pp 126, 129; "Narodnoye khozyaystvo RSFSR v 1975 godu. Statisticheskiy yezhegodnik" /The RSFSR National Economy in 1975. A Statistical Yearbook/, Moscow, "Statistika", 1976, pp 88-89, 91, 93-96, 100-103, 110-113, 121, 124, 128, 132-136; "Narodnoye khozyaystvo RSFSR v 1965 godu. Statisticheskiy yezhegodnik" /The RSFSR National Economy in 1965. A Statistical Yearbook/, Moscow, "Statistika", 1966, pp 82, 110-114, 119, 121, 125, 128, 135-137, 146, 149, 154, 158-162.

The development of a major fuel and power base in Western Siberia, of all-union bases for the production of nonferrous metals, the products of the timber and timber processing industry and energy-consuming chemical products was the most important result of the economic development of Siberia during the latest period. Among the procurement stages of production ferrous

metallurgy was developed at the lowest rate, which is explained by the relatively slow increase and technical updating of its production equipment. Apparently, the dynamics of production in Siberian machine building are explained mainly by similar reasons.

The slowing of the growth of the chemical industry led to a decrease of the proportion of Siberia in the all-union production of chemical products. This is explained, on the one hand, by the shortage of raw materials and the low efficiency of some works and, on the other, by the reserved position of the ministries in determining the prospects of the sector in Siberia.[2]

The development of electric power engineering in Siberia in recent times was in obvious contradiction with the previous trend and the instructions on the anticipatory growth of this sector of industry. Whereas during the Eighth Five-Year Plan the growth rate of electric power engineering was still quite high (12.2 percent), during the Ninth Five-Year Plan it decreased sharply (to 7.5 percent) and was even lower than the industrywide growth rate of gross production (8.2 percent). This was the direct result of holding back capital investments in heat and power engineering for many years.

Table 2

The Share of Siberia in the Gross Production of the Sectors of USSR Industry, Percent

(1) Отрасль промышленности	1960 г.	1965 г.	1970 г.	1975 г.
(2) Вся промышленность	8,1	8,2	8,5	8,8
Электроэнергетика (3)	11,3	13,6	15,5	16,2
(4) Топливная	12,8	14,6	17,0	22,1
Химическая и нефтехимическая (5)	6,2	12,0	9,5	9,7
(6) Машиностроение и металлообработка	9,7	7,5	8,1	7,5
Лесная (7)	12,6	14,9	14,9	15,4
(8) Промышленность стройматериалов	8,7	9,0	9,1	8,6
Легкая (9)	4,2	4,2	5,0	5,8
(10) Пищевая	6,4	6,9	6,7	6,6

Key:

1. Sector of industry
2. All industry
3. Electric power engineering
4. Fuel
5. Chemical and petrochemical
6. Maching building and metalworking
7. Timber
8. Construction materials industry
9. Light
10. Food

2. See "Razvitiye narodnogo khozyaystva Sibiri" /The Development of the National Economy of Siberia/, Novosibirsk, "Nauka", 1978, pp 207-213.

During 1961-1975 the gross production of Siberian industry increased 3.5-fold, while that of USSR industry increased 3.2-fold. As a result the share of Siberia in the all-union industrial production increased slightly: it reached 8.8 percent in 1975 as compared with 8.1 percent in 1960 (Table 2). The proportion in the total production of the leading sectors of union specialization--electric power engineering, the fuel and timber industries, nonferrous metallurgy--increased steadily. For the chemical industry the maximum share of Siberia in the all-union production was achieved during the Seventh Five-Year Plan (12.0 percent in 1965), then fell sharply (to 9.5 percent in 1970) and increased slightly at the end of the Ninth Five-Year Plan (9.7 percent). The proportion of Siberia in the gross production of light industry, which as a whole is not a sector of specialization, increased gradually. The share of Siberia remained stable in the construction materials industry (although this did not conform with the rapidly increasing demands of capital construction) and the food industry (which mainly reflected the lag of agriculture).

Since the starting point has a great influence on the magnitude of the share of Siberia in the absolute levels of all-union production, the increasing role of Siberia in the development of USSR industry is reflected more fully in the indicators of the increase of production (Table 3). An especially significant share of Siberia in the increase of all-union production during the Ninth Five-Year Plan was achieved for the fuel industry (38.4 percent).

Table 3

Proportion of Siberia in the Increases of the Gross Production of USSR Industry by Five-Year Periods, Percent

(1) Отрасль промышленности	1961—1965 гг.	1966—1970 гг.	1971—1975 гг.
(2) Вся промышленность	8,2	9.2	9.6
Электроэнергетика (3)	16,1	19,0	18.0
(4) Топливная	23,6	24,1	38.4
Химическая и нефтехимическая (5)	16.4	6.4	10.0
(6) Машиностроение и металлообработка	5.6	8.8	6,7
Лесная (7)	35,5	14,9	17.9
(8) Промышленность стройматериалов	9,7	9,2	7,5
Легкая (9)	4.3	6,5	8.6
(10) Пищевая	8.6	6.2	6.0

Key:

1. Sector of industry
2. All industry
3. Electric power engineering
4. Fuel
5. Chemical and petrochemical
6. Machine building and metalworking
7. Timber
8. Construction materials industry
9. Light
10. Food

Siberia has steadily increased its share in the production of such important products as ferrous and nonferrous metals, petroleum, gas, coal, electric power, commercial timber, lumber (Tables 4 and 5). Against this background the indicators of the dynamics of the production of a number of chemical products, paper and cement seem unsatisfactory.

Table 4

Proportion of Siberia in the All-Union Production of the Most Important Types of Products, Percent

(1) Виды продукции	1960 г.	1965 г.	1970 г.	1975 г.
(2) Чугун	7.1	7.2	9.3	9.2
Сталь (3)	5.8	6,5	7.3	8.8
(4) Прокат	6,6	6,7	7.9	8.7
Трубы стальные (5)	—	—	3.4	3.8
(6) Железная руда (концентрат)	—	—	6.6	6.5
Нефть (вкл. конденсат) (7)	0,0	0.4	8.8	30.1
(8) Уголь	23.1	23.8	28.6	29.0
Газ (вкл. попутный) (9)	0.0	0.3	4.9	13.3
(10) Электроэнергия	13.2	15.4	16.0	16.1
Трактора (11)	—	—	6.4	7.4
(12) Станки металлорежущие	3,4	2.8	1,8	1.9
Минеральные удобрения (13)	1.6	5.9	5.0	3,1
(14) Синтетические смолы	13.7	16.4	15.1	13.0
(15) Синтетические и искусственные волокна	15.7	17.8	13.1	11.4
Сборные ж/б конструкции (16)	7,0	7,1	7,5	8.7
(17) Вывозка древесины	19.1	22.8	24.2	25.9
Ткани всех видов (18)	2,6	3,6	3.1	3.1
(19) Мясо	10.0	9.9	8.5	7.6
Масло животное (20)	12,1	11.2	12.5	12.9
(21) Полиматериалы	17.8	20,9	19.9	22.5
Бумага (22)	0.5	3.0	2.9	2.6
(23) Цемент	9,9	9.0	10.0	9.6
Верхний трикотаж (24)	3,2	4.3	6.4	6.2
(25) Кожаная обувь	5.2	4.6	4.6	4,3
Мебель (26)	6,8	6.7	6.5	6.5
(27) Сахар-песок	0,6	0,5	0,4	0,4

Key:

1. Types of products
2. Cast iron
3. Steel
4. Rolled products
5. Steel pipe
6. Iron ore (concentrate)
7. Petroleum (including concentrate)
8. Coal
9. Gas (including casing-head)
10. Electric power
11. Tractors
12. Machine tools
13. Mineral fertilizers
14. Synthetic resins
15. Synthetic and artificial fibers
16. Precast reinforced concrete components
17. Removal of timber
18. Fabrics of all types
19. Meat
20. Animal oil
21. Lumber

/Key continued on following page/

Key:

22. Paper
23. Cement
24. Knitted outerwear
25. Leather shoes
26. Furniture
27. Granulated sugar

Table 5

Proportion of Siberia in the All-Union Increases of the Production of the Most Important Products by Five-Year Periods, Percent

(1) Виды продукции	1961—1965 гг.	1966—1970 гг.	1971—1975 гг.
(2) Чугун	7,5	16,2	8,8
Сталь (3)	8,6	10,4	15,8
(4) Прокат	7,2	11,6	19,9
Трубы стальные (5)	—	—	5,0
(6) Железная руда (концентрат)	—	—	6,2
Нефть (вкл. конденсат) (7)	1,0	27,6	83,2
(8) Уголь	28,7	34,4	32,9
Газ (вкл. попутный) (9)	0,5	13,2	31,6
(10) Электроэнергия	18,3	17,2	16,5
Трактора (11)	—	—	12,6
(12) Станки металлорежущие	—0,3	—9,9	—2,8
Минеральные удобрения (13)	7,5	3,3	0,4
(14) Синтетические смолы	18,0	14,0	12,5
(15) Синтетические и искусственные волокна	20,0	4,1	8,7
Сборные ж/б конструкции (16)	7,2	8,6	12,4
(17) Вывозка древесины	173	111,5	83,2
Ткани всех видов (18)	12,8	—0,6	2,8
(19) Мясо	9,7	3,1	5,4
Масло животное (20)	9,0	—7,2	15,8
(21) Пиломатериалы	83,2	0,3	169,5
Бумага (22)	9,5	2,8	1,1
(23) Цемент	7,6	13,0	8,4
Верхний трикотаж (24)	6,0	8,2	4,0
(25) Кожаная обувь	0,7	4,8	6,3
Мебель (26)	6,5	6,5	6,5
(27) Сахар-песок	0,4	—2,1	1,7

Key:

1. Types of products
2. Cast iron
3. Steel
4. Rolled products
5. Steel pipe
6. Iron ore (concentrate)
7. Petroleum (including condensate)
8. Coal
9. Gas (including casing-head)
10. Electric power
11. Tractors
12. Machine tools
13. Mineral fertilizers
14. Synthetic resins
15. Synthetic and artificial fibers
16. Precast reinforced concrete components
17. Removal of timber
18. Fabrics of all types
19. Meat

/Key continued on following page/

Key:

20. Animal oil
21. Lumber
22. Paper
23. Cement
24. Knitted outerwear
25. Leather shoes
26. Furniture
27. Granulated sugar

The changes in the sectorial structure of USSR industry in the past decade have had a quite definite trend. A constant decrease of the proportion of the extractive sectors and an increase of the proportion of the processing sectors in the total volume of industrial production have been occurring. In Siberia there are significant peculiarities (see Table 6). The proportion of the extractive sectors in 1975 here was 2.3-fold greater than in all-union production (in 1967 it was 1.9-fold greater). During the past two five-year plans this proportion has changed little. In some years an increase of the proportion of the extractive industry has even occurred, above all through the accelerated growth of petroleum and gas production. The changes in wholesale prices, which occurred in 1967 and 1975, promoted an increase of the proportion of the extractive industry in the gross production of all industry. Thus, in 1975 the proportion of the extractive industry in 1967 prices was 18.7 percent and in 1975 prices 19.8 percent.

Table 6

Proportion of the Extractive Industry in the Gross Production of All Industry (in 1967 Prices), Percent

	1967	1968	1969	1970	1971	1972	1973	1974	1975
USSR	10.1	9.6	9.8	9.0	9.0	9.2	9.2	8.4	8.2
Siberia	19.5	19.0	18.9	18.8	18.6	18.4	18.5	18.7	18.8

The changes in the sectorial structure of Siberian industry during 1961-1975 coincided in part with the structural shifts in the industry of the entire country: an increase of the proportion of machine building and the chemical industry occurred, the proportion of the food industry decreased to an even greater extent (Table 7). The increase of the proportion of the fuel industry, which began in 1967 and continues to this day, is a significant distinction of the dynamics of the sectorial structure of Siberian industry. The share of the sectors of the timber industry complex decreased more slowly in Siberia than on the average for the USSR. The indicated peculiarities of the change in the sectorial structure are natural, taking into account the role of Siberia in the formation of the fuel and raw material balances of the country.

During the entire period in question labor productivity in Siberian industry increased quite rapidly, but at the same time a decrease of the output-capital ratio occurred (Table 8). Labor productivity in Siberia increased

somewhat more rapidly than on the average for the USSR. Thus, Siberian industry was developed comparatively efficiently according to the labor factor and less efficiently from the point of view of the utilization of fixed production capital. Whereas in 1960 the output per worker in Siberia was 8 percent lower that the average union output, in 1975 it exceeded the average union level by 1.4 percent. At the beginning of the period in question the output-capital ratio in Siberian industry was almost equal to the average union output-capital ratio (it was 1 percent lower), but in 1975 the gap had already reached 24 percent. To some extent the deviation from the average union rates of change in labor productivity and capital is explained by the fact that structural shifts and an increase of the proportion of the nonlabor-consuming and capital-intensive sectors, such as the petroleum and gas industries and nonferrous metallurgy, occurred in Siberian industry. However, the output-capital ratio also decreased in the majority of other sectors. As compared with 1960 it increased only in machine building and the chemical industry.

Table 7

Proportion of Individual Sectors in the Total Production Volume of Siberian Industry, Percent

(1) Отрасль промышленности	1960 г.	1965 г.	1970 г.	1975 г.
Вся промышленность (2)	100	100	100	100
(3) Электроэнергетика	3,2	4,6	5,3	5,1
Топливная (4)	13,8	12,5	12,4	14,2
(5) Черная металлургия	5,7	5,3	4,8	4,0
Химическая и нефтехимическая (6)	3,9	7,3	6,7	7,6
(7) Машиностроение	17,2	18,4	21,9	23,5
Лесная (8)	12,3	10,7	9,1	8,2
(9) Промышленность строительных материалов	4,3	4,5	4,4	4,0
(10) Легкая	11,7	8,8	9,9	9,7
Пищевая (11)	22,8	20,2	16,7	14,1

Key:

1. Sector of industry
2. All industry
3. Electric power engineering
4. Fuel
5. Ferrous metallurgy
6. Chemical and petrochemical
7. Machine building
8. Timber
9. Construction materials industry
10. Light
11. Food

Table 8

Dynamics of Labor Productivity and Output-Capital Ratio in Siberian and USSR Industry

(1) Показатель	(2) Темпы роста в %, к 1960 г.			(3) Среднегодовые темпы прирос-та, %		
	1965 г.	1970 г.	1975 г.	1961–1965 гг.	1966–1970 гг.	1971–1975 гг.
(4) Производительность труда						
(5) Сибирь	128	171	236	5.0	6.0	6.4
(6) СССР	126	166	223	4.7	5.7	6.1
(7) Фондоотдача						
(5) Сибирь	84,0	76,0	69,0	−2.2	−2.0	−2.8
(6) СССР	90,0	86,0	84,0	−2.0	−0.2	−1.1

Key:

1. Indicator
2. Growth rate as a percentage of 1960
3. Average annual growth rate, percent
4. Labor productivity
5. Siberia
6. USSR
7. Output-capital ratio

Table 9

Increase of the Capital-Labor Ratio in Siberian and USSR Industry

	(1) Темпы роста в %, к 1960 г.			(2) Среднегодовые темпы прирос-та, %		
	1965 г.	1970 г.	1975 г.	1961–1965 гг.	1966–1970 гг.	1971–1975 гг.
(3) Сибирь	154	224	366	9.0	7.7	10.3
(4) СССР	143	192	272	7.4	6.0	7.2

Key:

1. Growth rate as a percentage of 1960
2. Average annual growth rate, percent
3. Siberia
4. USSR

The process of replacing living labor with means of labor is rapidly occurring in Siberian industry. The capital-labor ratio here is increasing considerably more rapidly than on the average for USSR industry (Table 9). And whereas at the beginning of the period in Siberian industry the capital-labor ratio was 8 percent lower than the average union ratio, at the end of the Eighth Five-Year Plan it overtook the average union ratio and continued

to increase during the Ninth Five-Year Plan at a more rapid rate. In 1975 it already exceeded the average union level by 33 percent. During the period in question the increase of fixed capital was the predominant source of the increase in the volumes of industrial production.

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FLAWS IN ECONOMIC RESEARCH IN REPUBLIC REVEALED

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 5, May 79 pp 18-21

[Article by A. Zhuravkov, Candidate of Economic Sciences: "When Forces Are Divided: Economic Research in the Republic Needs Improvement in Planning and Coordination"]

[Text] In recent years the potential of economic science in Belorussia has risen considerably. At the present time it is represented by eight scientific-research institutes and branches, a number of divisions and departments in union-level scientific-research institutes, eight centers for the scientific organization of labor, 15 branch economic scientific-research laboratories, and about a dozen divisions and sectors of scientific-research and construction-planning institutes and other subdivisions. Nor should one disregard the contribution made by the specialists in economic science who are working in educational institutions.

Last year the total number of scientific workers employed in the economy exceeded 3000. That means that every eleventh scientific worker in the republic is an economist. They include 31 doctors of science and 858 candidates of science. As compared with 1965, the number of scientific workers specializing in economics increased by a factor of 3.7; doctors of science, by a factor of 10.3; and candidates of science, by a factor of 3.3.

All this has had a beneficial influence upon the quality of the scientific research. It has received a considerable further development, the theoretical level of the research projects has risen, and the results of many of them have found application in the practical work being performed by soviet and economic agencies. One cannot overlook the contribution made by economic scientists to the development and placement of our republic's productive forces, the specialization and concentration of production, the improvement of cost accounting, and the development of automated control systems at various levels, and output quality-control systems, and to the resolution of a number of other questions.

There has been a slight improvement in the planning, organization, and coordination of the scientific-research projects, the integration of the scientific

efforts, the material-technical base of the scientific institutions has become stronger, and their ties with the institutes of the USSR Academy of Sciences, USSR Gosplan, and many other institutions and institutes in the country have also become stronger. For example, the Gosplan of Belorussian SSR, jointly with the republic's scientific institutions, developed a list of the most important economic problems, which encompass a broad circle of research projects. They involve: the methodology of determining the effectiveness of the republic's social production; the substantiation of its economic and social development; the creation of complexes of automated systems for control of the national economy, methods and means of achieving a high level of quality in manufactured articles, etc.

The Institute of Economics, of the Academy of Sciences of the Belorussian SSR, is carrying out research to substantiate the methodological principles of evaluating the economic effectiveness of social production. The Scientific-Research Institute of Economics and Economic-Mathematical Methods of Planning (NIIEMP), attached to Gosplan, Belorussian SSR, is working on the second phase of an automated system of planning computations for BSSR Gosplan. It is also developing comprehensive programs for the development of the republic's national economy for the long term.

The following are a few examples. The Belorussian Branch of the Scientific-Research Institute of Labor is developing recommendations for improving the providing of material incentives in industry, for increasing the labor productivity and the quality of output, and the broad introduction of collective forms and systems of wages for the final results of production. The collective at the Belorussian Branch of the All-Union Scientific-Research Institute of Problems of Organization and Control (BF VNIIPOU) is working on the further improvement of the control of the branches of the republic's national economy on the basis of the concentration and specialization of production and the creation of large-scale production associations. The Belorussian Branch of the State Scientific-Research Energy Institute imeni G. M. Krzhizhanovskiy is developing an optimal version for developing the fuel and energy management of Belorussian SSR by 1990 and the basic trends in its development up until the year 2000. It is expected that the optimizing of the fuel and energy economy in the republic will make it possible to save as much as 10 percent of the expenditure for fuel supply.

There has been a further development of socioeconomic research. Belorussian State University imeni V. I. Lenin is engaged in problems of labor sociology, the changes in the nature and conditions of labor during the period of mature socialism, and in research on the ways and forms of increasing the rate of labor and social participation of the workers at industrial enterprises. The purpose of the studies is the broad involvement of the workers in the control of production and social life. The Belorussian Branch of the Scientific-Research Institute of Labor is preparing methodological instructions dealing with the organization and control of the socialist competition. The task posed is to increase the effectiveness of that competition, and to intensify its effect upon the solution of the economic, social, and political tasks in the development of our society.

For the purpose of expanding and deepening [illegible] years branch scientific-research economic institutes [illegible] were created. They develop forecasts for the [illegible] for improving the control of production, [illegible] its effectiveness, generalize the advanced [illegible] and labor; and engage in questions of planning, [illegible] in the execution of scientific-research projects.

At the same time, the work being published by the institutes and the plans pertaining to the scientific-research laboratories [illegible] contain a large number of serious shortcomings. An examination of these indicates the expected work remains [illegible] for all topics in the plan, the economic effect has been [illegible] million rubles during the five-year plan. The most [illegible] in the plans is their lack of completeness. The fact is [illegible] when the plans for SRR (scientific-research work) [illegible] it is absolutely mandatory to determine the [illegible] for introducing the results of the research. [illegible] condition is practically never carried out [illegible] or economic subdivisions of the ministries [illegible] duction" as a very important stage in the research [illegible] plans of the economic laboratory of Minelektrom, the [illegible] [scientific organizations of Gosplan and the Council of Ministers] BSSR Minlegprom, but here too there is no interest [illegible] that are responsible for the introduction. A third [illegible] is the duplication. For example, NIIEKhim is [illegible] intrarayon ties in the chemical industry of BSSR, [illegible] Ties, NIIEMP, attached to BSSR Gosplan, engages [illegible] VNIIKS studies the basic trends in the development [illegible] of the republic's population with regard to [illegible] Center for NOT and PP, BSSR Minlegprom, is [illegible] questions with regard to articles produced by light [illegible]

There are a number of inconsistencies in the [illegible] tions and co-executors. For example, NIIEMP planned to [illegible] Minlegprom a forecast for the optimal [illegible] in 1977, and [illegible] for the completion of the studies -- 1978 and 1980.

And here is something else. The expenditures required [illegible] have not been determined for all the scientific-research [illegible] some of the projects these expenditures have not been [illegible] example, for the purpose of drawing up annual [illegible] the laboratory of the BSSR Ministry of Food Industry plans to expend 1500 rubles, and the Ministry of Local Industry [illegible] development of the providing of everyday services [illegible] and to determine the goals, tasks, and [illegible] laboratory at BSSR Minkhoz plans to expend [illegible] laboratory plans to expend 18,000 rubles simply [illegible] development of the branch. The laboratory of the Ministry of [illegible] plans to expend 11,000 rubles to develop the [illegible]

the branch, but the very same topic at Belmezhkolkhozstroy "costs" 50,000 rubles, and at BSSR Mintorg the unbelievable amount of 133,000 rubles. To develop and introduce a system for controlling the quality of output, the laboratory at BSSR Minpromstroymaterialov is planning to expend 12,000 rubles, but BSSR Minbyt is planning to expend 81,000 rubles. For research on topics linked with improving the competition, the laboratory at BSSR Minpishcheprom plans to expend 60,000 rubles, and that at BSSR Minmyasomolprom, 106,000 rubles.

One also encounters completely inexplicable situations. For example, the laboratory at BSSR Minmyasomolprom in 1976 completed research on the topic "Generalize the experience in organizing and controlling the socialist competition." In 1977, for some reason, that laboratory returned to the same topic, changing its name and increasing the expenditures from 3000 rubles to 9000 rubles.

The list of topics at a number of laboratories is extensive and nonspecific. For example, the topical plan at the laboratory of the Ministry of Automotive Transport has collected all the problems pertaining to improving the planning and control. The final results of the research are unclear, and therefore the monitoring of the execution of the NIR plan, practically speaking, is impossible, since the volume of the work has not been clearly defined. Or take this additional example. The NOT laboratory at BSSR Minpishcheprom is repeating for the fourth time in a row the topic "Generalize the experience in organizing and controlling the socialist competition." The Center for NOT, at BSSR Minmyasomolprom, has constructed the entire list of topics on improving the system of socialist competition, ending with a system for summing up the results.

In addition to the list of topics being planned, the laboratories execute a large number of ad-hoc assignments in conformity with the needs of the ministries. Frequently these assignments predominate over the planned list of topics, and the laboratories are converted into the "fire brigades" of the ministries and departments.

Many laboratories lack a definite procedure for developing and approving the work programs, or for preparing reports on the executed topics. Frequently, no working programs are drawn up for the topic. The level of methodological work is inadequate. The number of executed projects that have found practical application is small. Many ministries and departments in a number of instances fail to approve the persons who are responsible for the work of the laboratories. The material-technical base of the scientific institutions requires reinforcement. One senses a shortage of electronic-computer technology, and of technical means for copying and reproducing the documents.

The solution of these problems requires the intensification of economic work as a whole. However, because of the lack of coordination in the efforts of the economists, many topics that are of great importance for the national economy are frequently resolved with the use of small efforts. On the average,

the elaboration of each of them requires 5-6 scientific workers. It is not surprising that individual topics have been in the process of elaboration for many years. Some of them, by the time they are completed, have lost their vital importance, and are obsolete. As a result, only individual projects find practical application in the national economy.

The existing decentralization in the control of scientific research is creating large difficulties, beginning with the elaboration and approval of the coordination plans and ending with the carrying out of the research projects themselves. Everything is carried on practically "voluntary principles." And this leads to a situation in which the cooperation organizations either advance excessive requirements concerning the increase in the number of workers and additional financing, or give their consent to execute small-scale assignments. But the lead executor does not have either the administrative or the financial capabilities to exert [illegible] influence upon them.

In order to develop the basic trends to be taken in scientific economic research and to define the most important republic-level problems, an interdepartmental council on economic science has been created under BSSR Gosplan. That council includes the republic's leading economists. It defines the most important republic-level problems in the field of economics; evaluates the present-day level of the research that is being carried out; develops the basic trends, sequence, and tasks for the most important scientific research; and considers the proposals submitted by scientific-research and design institutes, institutions of higher learning, ministries, and departments dealing with the development of the economic and [illegible] problems, and the inclusion of them in the State Plan for the Development of the Republic's National Economy. Its purview also includes the draft versions for coordination plans; questions pertaining to the distribution of financial resources; and scientific reports dealing with the completed research projects. The council makes recommendations to the directive, planning, and economic agencies. The current and operational work of the interdepartmental council is conducted by its working agency -- the Division for the Coordination of Scientific Research Projects Dealing with Republic-Level Economic Problems, which was created on the table of organization of NIIEMP, attached to BSSR Gosplan.

What results has the council achieved in its work? The council has considered and approved the coordinating plans for developing such problems as "Increasing the effectiveness of social production in Belorussian SSR on the basis of intensification (methods and methodology, criteria, and indicators)," "Generalizing the experience and developing the recommendations for improving the organization of socialist competition in the republic's industry and the control of that competition," and many others. More than 90 institutions have been involved in developing them as co-executors -- scientific-research institutions and technology-design organizations, and the economic subdivisions of various ministries and departments.

A council decision recommended that NIIEMP, attached to BSSR Gosplan, raise the

scientific level and practical significance of the programs being developed; expand and deepen the research on questions of a methodological nature, especially those linked with the place that programs occupy within the system of national-economic planning, with the broader application of methods of economic mathematics and electronic computers in substantiating the optimal versions for the development of the republic's national economy, its branches, and spheres; deepen the territorial breakdown of the comprehensive programs; extend the work involved in generalizing the materials in the individual comprehensive programs, with the purpose of substantiating the prospects for developing the national-economic complex of the republic as a whole; and improve the coordinating work with the co-executors.

The council discussed and approved the project "Basic principles and recommendations for quality control of the work in the production and nonproduction spheres of activity." The purpose of executing the project is to assure the methodological unity during the designing of the comprehensive systems for work quality control (KS UKR) in the branches of the national economy.

The council also discussed such problems as the creation of a scientific-economic association on the basis of the interbranch scientific-research organizations in the republic and the direction to be taken in the research of the Belorussian State Institute of the National Economy. It was noted that, in view of the acceleration of the rates of scientific-technical progress and the changeover from extensive to intensive forms of scientific activity, the posing of the question of centralizing the control of scientific research is completely correct, and it was also noted that the work of substantiating this form of controlling the activity of the leading scientific institutions which specialize in the economic area should be continued.

It was recommended that the Belorussian State Institute of the National Economy carry out research on concentrating the scientific efforts on the solution of the problems that are most important for the republic's economy, take steps to intensify the ties between the institute and production, and achieve an increase in the number of introduced projects.

The interdepartmental council is faced with the task of rendering assistance to the workers at the scientific-research institutes, branch laboraties, and other economic subdivisions in raising the level of planning and coordination of scientific-research projects so that the national economy will receive the maximum benefit from each research project.

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INCENTIVES FOR EFFICIENT WORKING CAPITAL UTILIZATION

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 6, Jun 79 pp 104-107

[Article by V. Fashchevskiy]

[Text] Increasing the efficiency of the utilization of working capital is one of the most important tasks facing enterprises, associations and other economic organizations in the present stage of communist construction. In the Central Committee's report address to the 25th party congress L. I. Brezhnev, general secretary of the CC CPSU and chairman of the Presidium of the USSR Supreme Soviet, noted the need for more effective and thrifty utilization of material and financial resources.[1]

In the 1976-1980 period measures are intended to raise the efficiency of utilization of working capital in the national economy. For instance, the state plan and budget envisaged targets for putting above-allowance inventories into economic circulation and for speeding up the rate of turnover of working capital. Economic levers, whose application in economic practice motivates enterprises and associations to be more efficient in the disposition of the resources available to them, are expected to play an important role here.

The present system of planning and economic incentives is helping to improve the utilization of working capital thanks to introduction of the charge on capital and the indicator of profitability relative to capital. But this measure is not effective enough to optimize the level of inventories of those current assets which are subject to allowances. Many enterprise directors prefer to pay the charge on above-allowance inventories (which reduces the size of incentive funds by a negligible amount), maintaining them against the possibility of interruptions in the supply of materials and equipment.

In our opinion the amount of the charge on capital should be differentiated so as to motivate enterprises to reduce the level of inventories of finished goods and supplies. It would be best to apply it at the regular rate only to inventories within the allowed limits, while a higher rate would be applied to above-allowance inventories, and the charge would be differentiated

as a function of the reasons why the inventories were built up. If the accumulation resulted from unsatisfactory enterprise performance (uneven pace of production, incomplete linkage between production plans and supply plans, shortcomings in the organization and planning of production, higher actual costs of materials, production in process and finished products as compared to the plan, etc.), then a higher percentage should be collected than in cases when the accumulation resulted from overfulfillment of the production program, the need to put new products into production, or shipment difficulties and other reasons that do not depend on the work force of the enterprise.

The differentiation of the interest rate on credit used for current operations over and above the reference figure for credit financing,[2] which has been proposed by certain economists, seems unacceptable for the following reasons. In the first place, it is contrary to the founding principle on which this form of credit is based--the inevitability of fluctuations in the need for working capital because of the periodic nature of the delivery of materials, the series pattern of production, etc. It follows that it is normal for total bank loan indebtedness to exceed the reference figure for credit financing in certain periods and therefore inadvisable to penalize the enterprise by applying a higher interest rate. In the second place, enterprises may have above-plan inventories of current assets subject to allowances even when they are not making full use of borrowed funds for working capital because they have sources of working capital not covered by the plan (accounts payable and unused balances of economic incentive funds and earmarked appropriated funds).

Some authors[3] believe that sources of working capital should be the basis for computing the charge on capital. We cannot concur in this opinion. Working capital circulates, passing successfully from one physical form to another. Its sources and the relative importance of various sources are not essential. All these considerations make it necessary to compute the charge on capital on the basis of the size of inventories of current assets subject to standard allowances. Moreover, it is best to compute the charge on capital and profitability so as to take into account the sum total of current assets subject to standard allowances regardless of the source of working capital. Such a measure would motivate enterprises and associations to fulfill their production program with optimum amounts of assets subject to standard allowances. At the present time inventories built up with loans of USSR Gosbank with merchandise or supplies as security, accounts payable but not yet due to suppliers, and deliveries not yet billed are subtracted from current assets as shown on the balance sheet. Since the interest rate on bank credit (averaging 2.8 percent) is considerably lower than the rates of the charge on capital (6 percent), and the use of accounts payable is altogether gratis, a situation has come about in which it is far more advantageous for the enterprise to use borrowed money or other liabilities than to strive to preserve and augment its own working capital. Moreover, under present conditions enterprises have less incentive to maintain optimum levels of inventories of current assets subject to standard allowances.

Our analysis shows that subjects of labor [illegible] the production process represent the highest percentage [illegible] inventories. For instance, according to the data on a number of machine-building ministries, above-allowance inventories [illegible] to allowances consisted of production stocks (61.6 percent), work in process (14.9 percent), finished products (16.7 percent), prepayments (5.4 percent) and miscellaneous current assets subject to allowances (1.4 percent).

Consequently, it would be better to encourage a [illegible] above-allowance production stocks. To that end [illegible] funds of enterprises and associations should be made directly dependent on the level of inventories relative to inputs of materials required in production of the product. When there is an unjustified [illegible] above-plan inventories, deductions to [illegible] should be made. So when the enterprise liquidates superfluous and unmarketable [illegible] should be increased. Moreover, USSR Gosbank should ensure [illegible] form of settlement as a penalty against purchasers building [illegible] inventories. This will make for closer bank oversight over the delivery of subjects of labor to enterprise warehouses, and thus will [illegible] more orderly.

In our view the measures proposed [illegible] overall level of inventories of finished goods and [illegible]

Before the economic reform was instituted, the interest [illegible] paid on bank credit was charged to production cost. [illegible] itself served as the source of the payment for credit [illegible] capital, and plantwide expenditures were charged to [illegible] and finished products. This procedure better solved the [illegible] and of economic motivation of better utilization of working capital than the present practice of charging the interest on credit [illegible], included in the distribution of the enterprise's profit. [illegible] in production cost, and consequently in the amount of working capital, resulting from inclusion of interest on credit in working capital is better able to motivate the enterprise than reducing [illegible] distribution by the amount of that interest. A similar [illegible] ter results from proportional shifts in the product mix, changes in prices of products, fines collected, and so on. Moreover, [illegible] interest belong by their economic nature to the costs of production and sales, and it is therefore unjustifiable to omit them from [illegible].

If USSR Gosbank were to pay enterprises interest on [illegible] in current accounts, this would also be a very important [illegible] efficient use of working capital. Enterprises with a surplus of their own working capital often withdraw it instead of keeping it in current account to build up above-allowance stocks of finished goods [illegible] not covered by bank credit, to cover accounts receivable, or to make outlays for major repairs and capital construction, and [illegible] of working capital. If interest were paid on money [illegible], then

it would be disadvantageous for the enterprise to withdraw working capital for these purposes. This would be conducive to adherence to the principle of using working capital for the designated purpose, and it would also serve as an additional incentive for speeding up the turnover of working capital, since the working capital made available would be in the form of money in the current account.

A solution also has to be found to the problem of enhancing the economic motivation to efficiently utilize working capital entirely in the distribution sphere and not subject to standard allowances. In order to increase the efficiency of utilization of working capital there should be a maximum reduction of the settlement time and the share of working capital represented by these current assets.

At the present time the share of assets not governed by allowances is increasing in the total amount of working capital. For instance, at the beginning of 1970 it was 17.8 percent in industry, while at the beginning of 1977 it was 19.8 percent. Accounts receivable were 2.7 and 4 percent, respectively.[4] Moreover, it should be borne in mind that during the year the relative share of accounts receivable and also of goods shipped is considerably higher as a rule, while it is lower at the beginning of the year, which is mainly the result of interindustry offsetting of loan indebtedness and a related extension of settlement credit to complete the clearing process.

The practice of a number of suppliers who ship products ahead of schedule considerably contributes to the growth of accounts receivable, which is why customers regularly send in refusals to pay their accounts.

Enterprises make shipments ahead of schedule in order to reduce balances of current assets subject to standard allowances (finished products) or to prevent their growth, which ensures a rise in the suppliers' level of profitability. Customers refuse to accept bills on such products, arguing that the delivery was premature or the commodity was not ordered. About 90 percent of the goods which customers have refused to pay for for these reasons are paid for subsequently.

There are also cases when some suppliers permit noncommodity payment documents for payment (i.e., when the products have not actually been shipped). At the same time a number of enterprises figuring as purchasers issue drafts or checks to pay for goods which have not been shipped, i.e., engage in unlawful payment of advances (commercial credit) to suppliers so that the latter can fulfill sales plans in a rigged way.

In order to encourage enterprises and associations to reduce the level of current assets not subject to standard allowances, it would be advisable to take the latter into account when the charge on capital and profitability are being computed. Here we are not referring to balances of goods which have been shipped if payment on them is not yet due, since an increase in this category results mainly from expansion of the shipping radius (which is

indispensable to development of the regions of the North, Siberia and Far East), nor cash on hand, whose increase results from working capital being made available because its rate of turnover has been stepped up.

In the economics literature there have been statements to the effect that working capital is utilized most efficiently in the distribution sphere, i.e., closer to the end of the cycle, and that it would be wise to allocate the largest possible share of working capital to the most mobile elements: cash on hand, finished goods and commodities, purchased intermediate products.[5]

This position is contrary to well-known theoretical principles. Assets in the distribution sphere and also in stocks of raw materials were referred to as the inactive part of capital by K. Marx, who pointed out that the smaller that share relative to all capital, the greater the profit, other conditions being equal.[6]

Thus it is in the production sphere that working capital is used most productively.

An increase in the share of "own" production elements (work in process and prepayments) and a reduction in the share of production stocks, finished products and accounts in the composition of the working capital of enterprises and associations should increase the efficiency of socialist reproduction.

So that enterprises and associations make better use of their working capital, there is a need in our view to add to the indicators now in effect the indicator of the outgo of working capital in the form of the ratio of the volume of output to total working capital minus work in process, prepayments, finished goods shipped and not due for payment, and cash on hand. The volume of output could be expressed as gross output or commodity output or by some other indicator: net output, the normative value of processing, or the standard wage, and also the sales indicator and--in certain cases--the profit indicator. These amounts must be excluded from the total amount of working capital, since these elements represent either the most productive commitment of resources or a necessary condition for the planned and proportional development of the economy or their increase reflects an improved use of working capital (a faster rate of turnover). It is therefore advisable to motivate enterprises to increase the share of these elements of working capital and to reduce the relative share of other components.

It is not conducive to speeding up the rate of turnover of working capital that enterprises making purchases do not have sufficient motivation to make payments on time. Proposals have therefore been made in the press for a measure to put pressure in that direction such as temporary suspension of the right to use cash incentive funds of enterprises if they violate payment discipline until they fully reestablish their ability to pay.[7] However, this is not convincing enough, since there is no basis for depriving a collective of an enterprise that has been performing well from their material

incentives because of shortcomings in the work of the financial division, on which punctuality in making payments to suppliers depends.

Economic motivation of reduction of nonpayment and consequently of the total amount of those components of working capital not subject to standard allowances should in our view pursue the direction of taking these into account when the charge on capital and profitability are computed and of adopting the proposed indicator of the yield on working capital.

It will improve the use of working capital and speed up its turnover greatly if there are incentives to withdraw it from circulation. Some authors[8] suggest for this purpose that most of the funds made available by speeding up the rate of turnover should be credited to the production development fund, while the rest would go to the ministry's reserve for extending temporary financial aid. But this procedure will not sufficiently motivate the collectives of enterprises, and therefore it would be wiser to credit a portion of these funds to the material incentive fund. There does not seem to be sufficient justification for using working capital to replenish the production development fund, which is intended for financing capital investments.

In a number of cases an undesirable effort might be made at enterprises to do everything to reduce the level of current assets subject to standard allowances in order to increase the size of incentive funds. Here a role should be played by the effort to improve the economic soundness of norms governing working capital and by close supervision to see that actual stocks fall within allowances.

Performance of these measures should in our opinion promote a further enhancement of economic motivation for the most rational and efficient utilization of working capital and consequently fulfillment of the decisions of the 25th CPSU Congress concerning achievement of a comprehensive rise in the efficiency of social production.[9]

FOOTNOTES

1. "Materialy XXV s"yezda KPSS" [Proceedings of the 25th CPSU Congress], Moscow, Politizdat, 1977, p 45.

2. "Finansy i kredit v usloviyakh khozyaystvennoy reformy" [Finance and Credit in the Context of the Economic Reform], edited by N. V. Garetovskiy, Moscow, Finansy, 1969, p 249.

3. G. L. Bromberg, V. G. Gribov, A. G. Lur'ye and V. L. Perlamutrov, "Planirovaniye oborotnykh sredstva na predpriyatii" [Planning Working Capital at the Enterprise], Moscow, Ekonomika, 1969, p 146.

4. "Narodnoye khozyaystvo SSSR za 60 let" [Sixty-Year History of the Soviet Economy], Moscow, Statistika, 1977, p 642.

5. FINANSY SSSR, No 3, 1968, p 43.

6. K. Marx and F. Engels, "Sochineniya," Vol 25, Part I, p 80.

7. DEN'GI I KREDIT, No 4, 1976, p 90.

8. N. S. Shumov, "Effektivnost' ispol'zovaniya oborotnykh sredstv v promyshlennosti" [Efficiency of the Utilization of Working Capital in Industry], Moscow, Finansy, 1972, pp 54, 55.

9. "Materialy XXV s"yezda KPSS," p 167.

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DELIBERATIONS OF USSR GOSPLAN EXPERT COMMISSION

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 6, Jun 79 pp 121-122

[Unsigned article]

[Text] The State Expert Commission is doing considerable work in the expert evaluation of materials on social and economic problems, schemes for development of sectors and industries and technical-and-economic justifications submitted to USSR Gosplan by ministries and departments. The commission makes it its principal task to discover the most rational decisions that guarantee maximum efficiency of social production.

In 1978 60 expert evaluations were made on matters concerning agriculture and reclamation, fuel, the fuel and power industry, chemistry, metallurgy, transportation, machinebuilding, the timber and paper industry, and forestry. Favorable conclusions were issued in 35 evaluations, and the preparation of material for 25 projects was deemed unsatisfactory, and they were returned to the authors for additional work that would take into account the remarks and recommendations of the expert commission.

Concerning all these matters the State Expert Commission made specific remarks and issued recommendations which are being taken into account by divisions of USSR Gosplan and by ministries and departments in their work.

Expert evaluation of the scheme for development and location of the microbiological industry in the 1976-1990 period established that the projected size of the demand for the principal microbiological product had been determined with sufficient soundness, that the use of those products is highly efficient, that there is a potential for obtaining production from diverse raw materials, and that the principal directions of the industry's technical progress and the predominant location of new enterprises in the country's eastern regions are correct. At the same time the commission found it necessary that the following additional aspects be worked on and reflected in the scheme: determination of the advisable development and location of the industry's raw materials base; mutual linkage of the scale of development of the microbiological industry and related industries, bringing them into conformity with limits on capital investments; justification of the planned location of enterprises so as to take ecological conditions into account. In

[illegible] for use as the principal basis for preparing [illegible] the prospective development and location of the microbiological industry.

The TEO (technical-and-economic justification) on increasing the mining and combined use of Baltic shale proposed for the period up to 1990 a sizable increase in the mining of shale, the organization of more extensive processing of the shale to yield liquid boiler and gas-turbine fuel, shale gas, and natural gasoline. It was acknowledged that the principal directions for the mining and processing of shale set forth in the TEO are correct, but at the same time a need for more detailed predesign elaboration of the specific volumes of construction. It was therefore recommended that [illegible] be prepared concerning project planning and construction of the shale mining enterprises in the first phase, of the shale processing plant, and of the new GRES, so as to take into account the remarks and proposals of the State Expert Commission.

The commission had taken up matters concerning [illegible] the chemical industry in the period up to 1990 and has acknowledged that the ministry of chemical industry's intention to predominantly develop capacities for the production of the principal types of chemical products through reconstruction, expansion, intensification and retooling of existing enterprises is in principle rational and can be supported. Performance of these measures in the European part of the USSR would bring about a sizable increase in capacities for production of nitrogen and phosphorus fertilizers, plastics and synthetic resins, and man-made fibers. But on the whole this study could not be approved, since the levels of production of the most important types of chemical products up to 1990 are not backed up by the relevant data concerning the requirement of the country's economy, nor is the study comprehensive [illegible] the production of synthetic rubbers and the products of heavy-organic synthesis; the balance of production was worked out in only one variant; the resources of hydrocarbon raw material for the production of monomers were determined without sufficient justification. At the same time the State Expert Commission acknowledged that this study could be used in preparing the scheme for development and location of the chemical and petrochemical industries if the remarks set forth in the conclusions of the expert [illegible] are taken into account.

The Comprehensive Scheme for Development of All Types of Municipal Passenger Transportation of the City of Gor'kiy up to the Year 2000 calls for construction of a railway and development of existing surface types of transportation and the network of streets and highways. The expert examination established that since the development of the city's transportation network is lagging behind the needs of production and the public the proposal to improve the transportation system by building a subway network is entirely correct. But the volume and pace of subway construction has been [illegible] unjustifiably low, since they do not make it possible to effectively solve the principal problems of capacity for the growing volumes of traffic and considerably diminish the efficiency of capital outlays for subway construction. The State

Expert Commission found it possible to recommend the scheme for approval for the projection period up to 1990.

The proposal of a method for calculating the need for materials-handling machines in industrial rail transport calls for determination of the optimum car processing time and the necessary number of machines required, the criterion being the minimum of cost to the national economy. It was established that by and large the proposed method meets the requirements of a normative document, that it is based on fundamentally correct principles, and needs only partial additional work in line with the remarks and recommendations set forth in the conclusion of the State Expert Commission. It is acknowledged that improvement of equipment to handle the planned volume of traffic will make it possible to achieve an economic benefit running to hundreds of millions of rubles.

The technical-and-economic report on building the fuel portion of the Kansk-Achinsk Fuel and Power Complex (KATEK), taking the need for Kansk-Achinsk coal as the point of departure, provides for construction of large new pits and reconstruction of two existing pits with a total capacity of 239 million tons per year.

It was found that coal reserves in the Kansk-Achinsk basin are fully adequate to cover the large and growing need for Kansk-Achinsk coal in the future. In terms of technical-and-economic indicators the mining of this coal is one of the best in terms of economic efficiency. Its cost in terms of standard coal for consumers in the regions of Siberia and also the specific capital investments are lower than the corresponding figures for Kuznetsk coal mined by the opencut method.

The State Expert Commission recommended that the USSR Ministry of Power and Electrification work together with interested organizations to prepare a unified TEO for building the Kansk-Achinsk Fuel and Power Complex for the period up to 1990 and also a scheme for development of that complex up to the year 2000.

The technical-and-economic justification concerning expansion of the Novocherkassk Electric Locomotive Plant, which was examined by the State Expert Commission, was recommended for approval, since the principal aspects of the plant's expansion (production program, base models of electric locomotives, technical and construction designs, and the makeup of the plant) were in principle dealt with correctly.

At the same time, it was found possible to reduce the total construction cost 60 million rubles and the work force 2,100 by eliminating excessive elements in auxiliary production operations, external utility mains, and utility and residential facilities.

The State Expert Commission faces large tasks in 1979 as well. The plan envisages expert evaluation of a number of major projects: for example, the

TEO on expansion of the ZIL Production Association, the scheme for development of the Unified Soviet Power System, the scheme for development of enterprises of nonferrous metallurgy, the scheme for development and location of the enterprises of light industry, the standards of specific capital investments for the chemical industry, etc.

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MODELING REGIONAL DEVELOPMENT PROGRAMS

Novosibirsk IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR--SERIYA OBSHCHESTVENNYKH NAUK in Russian No 1, Jan 79 pp 21-27

[Article by V. B. Bostandzhyan and G. M. Mkrtchyan, Institute for the Economics and Organization of Industrial Production of the Siberian Department of the USSR Academy of Sciences, Novosibirsk: "Simulating the Process of Fulfillment of a Regional Development Program as a System"]

[Text] Unity from the standpoint of economic geography and a certain integrity of the process of reproduction, based on the formation of intersector structures with a relatively closed production cycle, are the principal criteria of the region as a subject of planning. As a form of the spatial organization of production, based on sectoral and geographic division of labor within the entire national economy, the region is, moreover, regarded as a certain subsystem of that economy, one whose operation is subordinated to the tasks confronting the system as a whole. At the same time the greater emphasis on comprehensiveness in economic development is raising a number of specific problems in future development which concern every region as a relatively independent entity. These problems predetermine the principal goal of regional development, which consists of building the economic structure that best suits the local conditions, yields the maximum benefit at the national level and at the same time guarantees a steady rise in the level of living of the population of the given locality. Balanced development of the sectors in the region is also provided for.

Every economic region has distinct industries and sectors in which it specializes; their development is determined by the existence of economical natural resources, the appropriate productive plant, geographic location, and so on. It is these sectors and industries that participate directly in interregional exchange and determine the given region's place in the country's geographic division of labor.

The secondary sectors and industries are expected to support the development of the specialized sectors and industries and to provide for the region's own needs. That set of sectors and industries comprises the economic region's productive infrastructure; its structure and scale of development depend mainly on the needs of the specialized sectors and industries and also

on the magnitude of the local resources and the efficiency of building its facilities within the region as compared to the cost of bringing the equivalent product in from outside. The specialized sectors and industries and the productive infrastructure together comprise the economic region's production complex, whose development is pivotal to the formation of labor resources and consequently the given region's population growth. The local population's needs for various products and services are met by the service industries and sectors, which together comprise the economic region's social infrastructure, whose makeup and scale of development are mainly determined by intraregional needs for its output.

We should note that the level of efficiency of the economic complex of every economic region depends on the degree of balance in development of the specialized industries, support industries and the facilities of the productive social infrastructures. Attaining the optimum pattern of the economic complex requires that a differing group of problems be solved for each of these elements so as to take into account the specific conditions of their operation and the constraints that apply. A large role must be attributed in this process to the geographic aspect of development, which presupposes the drafting of a comprehensive prospective plan of the entire region's development. This plan should meet the needs of the national economy and give maximum consideration to regional needs.

The existence of stable technological, production, economic and organizational connections, both external and internal, is a mandatory condition for the normal functioning of the economy of any economic region as a complex multifunctional unit of the country's national economy. These connections determine the given region's place in the country's national economic complex, its specialization in the interregional and intraregional division of labor and the hierarchical pattern of the subsystems (sectors and industries) of the region's economy, and thereby the stages in regional planning as well. As a matter of fact in the stage of compiling the prospective plan for development of the national economy the economic region, along with other departments and the country's regional planning and administrative agencies, submits information to the top level on its capabilities and resources, on the costs at which the production program assigned it from the center can be carried out, and also on the resources of other regions it needs (feedback connections). All this information is processed and evaluated from the standpoint of the national economy, following which central planning and management authorities determine the production assignment for the specialized sectors and industries (the country's need for the region's resources or end product) and the composition and quantity of resources (products) which they can allocate to the given region (direct external connections). We should note that in this stage of planning the basic subsystems of the regional system (specialized sectors and industries) are distinguished; volume indicators and rates and proportions of prospective development are determined for them.

Regional planning and management authorities then strive to ensure the integrated development of the specialized sectors and industries, to which end they solve such problems as intraregional location of industrial enterprises; determination of their size, their specialization, and of the direction and rates of development of production at individual enterprises; determination of the capital investments necessary for new construction and reconstruction of existing enterprises and the distribution of those investments among projects; distribution of resources in short supply among enterprises and ascertainment of the most expedient relations among the productive facilities of sectors and industries and also between them and consumers of their products. All this in turn makes it necessary to devise special-purpose programs to plan the group of enterprises in a particular sector or industry which are bound together by production technology in the manufacture of a particular type of product and constitute a production complex within the industry or sector.

The basic principle in defining the production complex within the region's sector or industry is the technological and economic interrelatedness of its enterprises resulting from the regional combination of plants of a single industry brought together because they are using the same raw materials, fuel, power, water, buildings and structures, manpower, etc.

Distinguishing the production complexes within sectors and industries where it would be good to examine and take major economic decisions will make it possible to attract capital investments for development of all its units in a purposive and planned manner. This makes it possible to effectively combine (economically and technologically) in a particular area production operations and subindustries of a single configuration which are interrelated, which tends to increase the efficiency of social production as a whole. Thus the production complexes within sectors and industries, as integral parts of the economy's region, are its relatively complete and important subsystems.

It can be said that in any economic region production complexes take shape within sectors and industries whose future purposive development is the subject of long-range comprehensive plans for prospective development (programs) compiled by local planning and management authorities. The goal of these plans is to see that the needs of the national economy for their products are met by the dates specified and conform to the assigned product list and the quality and quantity specified.

But providing for the efficient development of complexes within sectors and industries cannot claim to be the principal purpose of regional planning. We should note that meeting the country's needs for resources and products assigned to it (providing for the purposive development of the sectors and industries which are its specialty) is the heart of the economic activity of any economic region. Mobilization of all resources is indispensable to fulfillment of national-economic assignments; at the same time the region sets itself the goal of providing for the most comprehensive development of its

own productive forces and high growth rates of production. The development of the specialized industries and sectors, then, is viewed in a close interrelationship with the productive and social infrastructures, which is an important factor in effective regional organization of the productive forces.

Particular attention must also be paid to the infrastructure because of the extremely high capital intensiveness and necessity of developing its individual elements. This is natural, since a lag of any one of them can disrupt the normal economic rhythm in the region and cause sizable losses of money and resources. The productive infrastructure, which is a prerequisite of the region's accelerated industrial development, contributes to the fullest utilization of material, labor, financial and other resources. The social infrastructure helps to raise the level of services of all kinds to the public and to improve the composition of the employed labor force, which is an important factor in raising the productivity of social labor. The next stage in regional planning is to solve problems related to development of the productive and social infrastructures.

Thus the vertical (sectoral) hierarchy of the regional organization of the productive forces can be represented by the specialized sectors and industries and the sectors and industries of the productive and social infrastructures, which comprise the entire economic complex of the economic region (Figure 1).

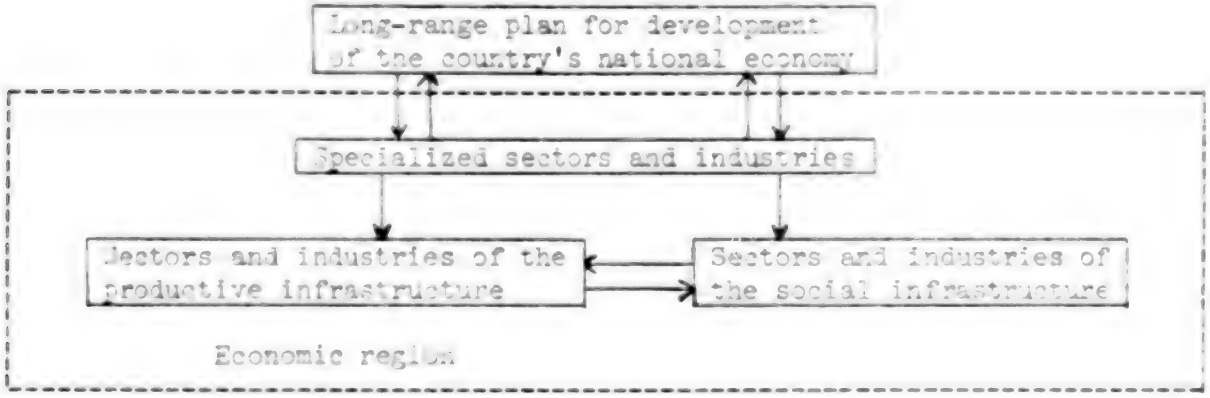

Figure 1

Along with the vertical (sectoral) hierarchy, the horizontal (regional) hierarchy of the organization of the productive forces is also very important; efficient combination of the productive forces guarantees the efficiency of social production. The need for the regional aspect of development comes about because the economic integrity of the regional units of any type is determined by the unity of their components, each of which is expected to perform a defined range of tasks in accordance with the conditions that have taken shape in it. As a matter of fact, the country's national economic complex unifies the major economic regions, which from the structural standpoint consist in turn of regions at the middle level (oblasts, autonomous

republics and union republics not divided into oblasts), that represent economic and administrative unity (integrity). Each of them is distinguished by the specific nature of the economic complexes it consists of and specializes in particular sectors and industries, which results from the regional division of labor.

The process of division into regions can be extended, since within each economic region at the middle level there are also economically integrated regional-industrial combinations objectively taking shape--intraregional (intrarepublic) economic areas. Distinguishing these subregions is very important in planning the region's economy. The reason is that every region's specific conditions predetermine its specialization in particular sectors and industries, so that the economic configuration (the comprehensive character of development, the level of economic "maturity," etc.) of intraregional areas may differ substantially. It is natural that this should give rise to interregional exchange involving delivery of the products of the specialized industries, of the productive infrastructure, and so on, and also involving exchange of labor resources. Consequently, it can be said that development of an economic region's economic complex should be planned both with respect to the branches of material production and also with respect to its geographic zones (areas).

From the standpoint of systems analysis everything we have said can be rephrased this way: the economic region is a complex open system (i.e., a subsystem of the more general national-economic system) which consists of subsystems at the lower level--specialized industries and sectors, the sectors and industries of the productive and social (social-welfare and consumer-service) infrastructures, and of intraregional areas. This kind of hierarchical organization of the economic region is justified; it is precisely in these terms that it can be regarded as a self-developing system possessing a certain developmental momentum of its own. Finally, in this hierarchical representation of the regional system the relative autonomy of its individual units is distinctly manifested, which makes it feasible and convenient to analyze and solve the problems of regional planning. This also makes it possible and necessary to adopt programs to plan the development of the economic region's economic complex.

The prerequisites indispensable to programmatic planning are created first of all by the sectors and industries that represent the region's specialization. The reason is that information concerning volume indices and rates and proportions of the development of its specialized sectors and industries is flowing from the level of the national economy to the regional level. The volume indicators serve as the basis for drafting comprehensive sectorwide and industrywide programs whose purpose is to meet the needs of the national economy for their products (resources), while the indicators of rates and proportions are used to determine the periods when these products (resources) will be produced. At the same time effective fulfillment of industrywide and sectorwide programs presupposes corresponding development of all other elements (the facilities of the productive and social infrastructures)

of the economic region's economic complex which are participants in that process. In other words, a program for development of the economic region's economic complex, whose objective is not only to provide for the purposive development of the specialized branches, but also the proportionate development of the region's productive forces, objectively takes shape in connection with carrying out the industrywide and sectorwide programs.

A very important factor in managing the process of carrying out an economic program is the preparation and adoption of economically valid decisions. In the case of the subject we are investigating, this means selecting the most effective scheme for proportional development of individual sectoral complexes and optimum geographic proportions within the region, which is possible only if extensive use is made of computers and the methods of mathematical-economic simulation.

In efforts to simulate economic processes at the present time the foremost problems are those of mutual adjustment of the various regional aspects of development, which constitute one of the main directions for raising the efficiency of social production. These problems can be solved most completely only by devising and realizing a multilevel system. This system makes it possible at the level of the national economy to use intersector and interregional models to set the optimum parameters for the country's individual sectors and industries and territorial units so that their development is purposive in future.* The results of such complex optimization, which presuppose mutually coordinated actions of sectors and regions, are taken into account at the national-economic planning level. In other words, in such a system there is a continuous two-way movement of the flow of information, an exchange of information between central and regional units, and an upward transmission of information. The key feature in model building is to devise mathematical-economic models that suit the various subsystems of the economic system under consideration, models reflecting both the internal and also external interconnections, models that conform to the hierarchical structure of the national economy. On the basis of everything we have said, a multilevel optimization system is proposed for simulating the process of carrying out long-range planning for development of sectoral complexes and for formation of the infrastructure (productive and social) in an economic region. The interaction of the models of the individual economic units of the proposed system is shown schematically in Figure 2. The diagram gives at the top level the models of implementation of economic programs for development of sectoral complexes. The mathematical equipment for simulating the process of program implementation is a network model, which is the most successful and effective type of assignment set of interrelated jobs.** A linear program model, which ensures proportional

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* Granberg, A. G., "Optimizatsiya territorial'nykh proportsiy narodnogo khozyaystva" [Optimization of the Economy's Territorial Proportions], Moscow, Ekonomika, 1973.

** Alekseyev, A. M., Kozlov, L. A., Kryuchkov, V. S., "Setevyye modeli v perspektivnom planirovanii proizvodstva" [Network Models in Perspective Production Planning], Novosibirsk, Nauka, 1974; Altayev, [illegible], Pogorlovskaya,

development of the sector or industry, interacts with every model of the sectoral programs. In other words, this model is like a control element which sees that planning targets for the output of specific products in the specialized sectors and industries by the subperiods (5-year periods) of the period covered by the long-range plan.

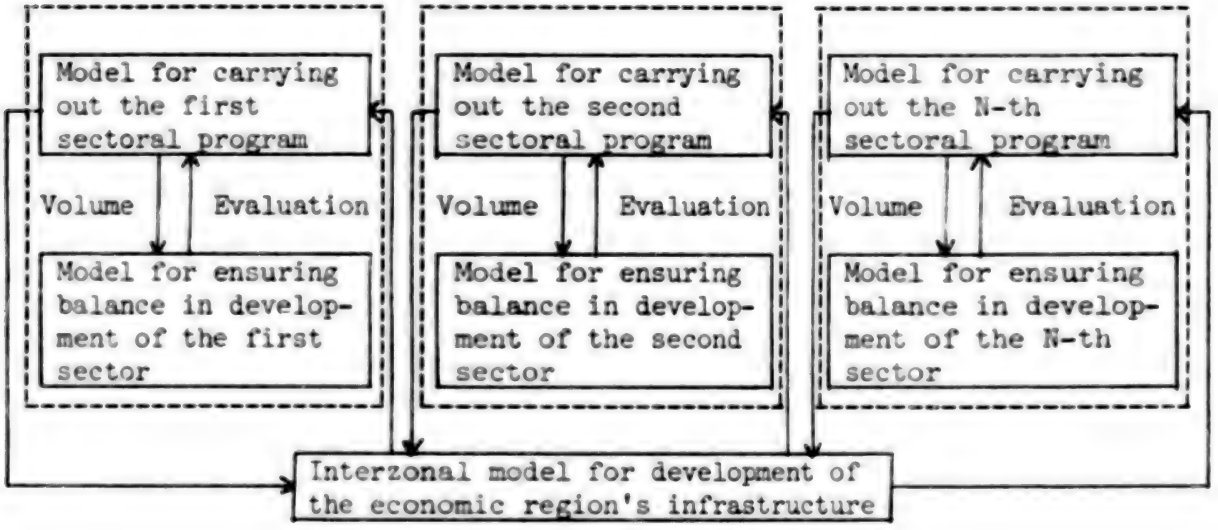

Figure 2

The model for shaping the infrastructural sectors and industries of the economy of the geographic zones of the economic region, whose responsibility it is to ensure achievement of the comprehensive sectoral programs, is considered at the lower level. The model of the lower level is shaped on the basis of the block problem in linear programming.

The proposed set of models amply reflects the program-by-program breakdown in planning the individual units of the economic region's economy, which are examined in close interaction with one another, and it represents with sufficient accuracy the economic processes taking place under real conditions.

The posing of this problem in economic terms is based on the fact that attainment of the resultant indicators of the long-range programs for development of sectoral complexes can usually be achieved by a great number of interchangeable methods differing, first of all, in the composition and volumes of resources used, and second, in the rate at which expenditures of those resources take place. Under those conditions the problem of optimizing economic programs can be formulated in general terms like this: within

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L. A., "Setevyye metody planirovaniya kapital'nykh vlozheniy" [Networking in Planning Capital Investments], Moscow, Nauka, 1976; "Dolgosrochnyye programmy kapital'nykh vlozheniy. Ekonomicheskiye problemy i modeli" [Long-Range Capital Investment Programs. Economic Problems and Models], Moscow, Ekonomika, 1974.

the limits of fixed periods of time and ratios [illegible] rates and proportions of the national economy, the socialist [illegible] are to be achieved thanks to a new, optimum rate of [illegible] resources at which total outlays for their production will be minimal.

In general form this problem can be clarified as follows. There is a set of permissible variants of fulfillment of the sectoral programs, each of which has its own sequence and times for attainment of goals as well as the related specific requirements for productive resources necessary to the measures contained in the program. The [illegible] specific products to be produced (output parameters of the [illegible] specific products) are set for each year of the planning period on the basis of some initial plan of fulfillment of sectoral programs in the form of [illegible] schedules. These volumes are used to arrive at the [illegible] limitations (input parameters) of the linear programming models for [illegible] national-economic rates and proportions is developed [illegible] phases. Thanks to the iterative exchange of information between the network models and the econometric [linear programming models] [illegible] are obtained for realization of the sectoral programs which make it possible to ensure the national-economic rates and proportions of their [illegible]. These same variables for fulfillment of programs at the [illegible] lower level) are used to arrive at requirements for [illegible] of the sectors and industries in the productive [illegible] and the socio-welfare and consumer-service infrastructure [illegible] upper level, pertaining to resources and services, which are indispensable to carrying out the programs. In accordance with [illegible] for coordination of the facilities of the sectoral complexes [illegible] are grouped together by the territorial units of the [illegible] and production targets are arrived at for the infrastructural sectors and industries; these targets figure as a vector of limitations [illegible] models, whose realization is covered by some plan [illegible] development.

Optimization of the proposed multilevel system [illegible] coordination of the linear-dynamic models for [illegible] infrastructure and the linear-programming models with the network [illegible] programs. Iterative exchange of information between the models of the upper and lower levels is organized in the system for that purpose.

Schedules allowable from the standpoint of [illegible] rates and proportions of development of the [illegible] industries are compiled in this process by the [illegible] previously. Assignments are also set for the infrastructural sectors and industries. Once the problem has been solved at enlarging the infrastructure (lower level), evaluations are made that reflect objective reality, [illegible] are used as a basis for design of improved plans for implementing the sectoral programs. The new plan is checked for permissibility from the standpoint of ensuring the given rates of development, and then new targets are assigned to the sectors and [illegible] the productive infrastructure and the socio-welfare

and consumer-service infrastructure, which make it possible to obtain new values of the evaluations.

The purpose of coordinating the models of the upper and lower levels is to arrive at such schedules for construction of facilities called for in the sectoral programs that the national-economic rates and proportions of their development are ensured at minimum outlays to develop the infrastructure.

Final realization of the proposed multilevel system of models presupposes the determination of optimum orders of priority and times for construction of the facilities called for in the sectoral programs, for development of the infrastructure of the region's territorial zones, for distribution of limited resources, and also for efficient utilization of labor resources.

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OVERALL APPROACH TO PRODUCTION ASSOCIATION DEVELOPMENT DISCUSSED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 6, Jun 79 pp 69-81

[Article by Ye. Shestopalova: "A Comprehensive Approach to the Development of Production Associations"]

[Text] The interaction of all the parts of the economic mechanism and their integration into an integral system necessitate the creation and development of production associations in an organic relationship to all the processes occurring in the economy.

The organization of associations on the basis of general sectorial management systems without any technical and economic basis or consideration of the specific conditions of economic activity, as experience has shown, extends the development period of the association and does not provide a proper rise in production efficiency.

Plans for the organization of a production association help to solve the basic problems which arise when it is formed. These plans are drawn up by specialists from the organizations and enterprises which comprise the association on a basis of design recommendations. The aim of the planning and designs is to work out the organizational forms for production and management aimed at turning the separate and relatively economically isolated enterprises into a single production and economic complex. An association's organizational plan determines the basic measures in the area of production specialization and concentration, its technical reequipping, the organization of management for efficiently carrying out the most important operational and economic functions, the realization of economic accountability relationships, as well as the social development of the associaton collective.

Regardless of the decline in the intensity of forming production associations in 1977 related to completing the introduction of the general management systems for the industrial sectors,[1] planning the organization of the

[1]While 34.8 percent of all the production and scientific-production associations operating in the industrial sectors on 1 January 1978 were organized in 1976, in 1977 the number was 7.6 percent.

associations has maintained its timeliness. As a whole for the USSR, there will be almost 3-fold more associations in operation in 1980 than in 1975.

The development plans of the association have a common structure with their organizational plans, although they differ somewhat in content.

The development plans focus on the problems of the technical improving of production and the redistribution of operational and economic functions, since the process of their centralization, as a rule, should be carried out during the stage of organizing the associations. This is substantiated by the experience of the associations in the Ukrainian garment and footwear industry. Thus, in the development plans of the L'vov Progress Footwear Industry Production Association organized in 1961, the centralization of functions is not provided, since the execution of these functions has already been centralized and to a certain degree automated by the introduction of the Progress automated management system in 1975. Full centralization of the functions of material and technical supply and the reallocation of operational and economic functions are planned only for 1980 in the plans of the L'vov Vesna Garment Industry Association.

The development plans for the associations which were organized comparatively recently and for which the development process is not complete include questions the solution to which could have been provided for procedurally in the organizational plans. For example, the Donets Donbass [Donets Basin] Association which was organized in 1976, in its development plans, by 1980, foresees the centralizing of the following functions: Technical and economic planning, the organization of labor and wages, material and technical supply and marketing, and financing. In practical terms for the associations which were organized without any technical and economic basis, the development plans are in essence the same organizational plans. The similarity is disclosed, in particular, in analyzing the measures included in them in the area of centralizing the operational and economic functions.

The range of the comprehensive approach to management at the present stage presupposes a defining of the place of association development planning in the overall system of measures to improve management, and an elucidation of the relationship of the association's development plans with the general management system, the management improvement plan and the 5-year comprehensive plan for the development of the production association.

The development plans of production associations are worked out on the basis of the general management systems and are their logical continuation.

In relation to the management improvement plan, as was pointed out in the Temporary General Sectorial Methodological Recommendations on Planning the Organization and Development of Production Associations in Industry as approved by the USSR Gosplan and the GKNT [State Committee for Science and Technology], the development plans operate as the initial basis for elaborating the plan.

economic accountability will contribute more fully to the reconciling of economic interests.

A rise in the level of the socialization of production leads to the growth of the basic self-financing element. Ever more resources are concentrated in the primary element of the economy, it possesses broad economic operational independence, and gains significant opportunities in the area of economic incentives for the workers. At the same time a number of problems arise in the organizing of its economic activities, and these cannot be settled solely on a basis of the economic accountability levers and principles. The necessity arises of strengthening control by the superior bodies over the activities of the primary economic elements, and their qualitative fulfillment of the state plans. It is very important that the plans for the organization and development of the primary economic element provide for the organization of internal economic accountability on the basis of a comprehensive system of planning and economic incentive which would institute a rational procedure for implementing the economic relationships both within the association as well as within the sector and on an intersectorial scale.

The plans of the association must be coordinated with the range of economic accountability levers, and each planned measure should be sound and provide the most efficient use of the economic levers of economic accountability for the purposes of most fully satisfying the growing needs of the workers. For this reason it would be wrong in working out the organizational and development plans of the associations not to provide in them for solving the questions of improving economic accountability, and to isolate them as an independent stage.[3]

It is very important that the organizational and development plans of the associations have a procedural support. The existing plans are based upon the mentioned Temporary General Sectorial Procedural Recommendations on the Planning of the Organization and Development of Production Associations in Industry. However, these contain only general instructions that the plans should provide for an improvement in the forms and methods of planning, economic accountability, direct and long-term economic ties, and the organizing of management on the basis of combining centralized leadership with economic initiative. However the specific questions of organizing economic accountability are lacking. The same is also characteristic for the sectorial procedural recommendations.

It is essential to delimit the problems of improving economic accountability relations incorporated in the plans and the comprehensive plans for the economic and social development of the production associations. A comparison of both types of plans in the Ukrainian meat-dairy and baking industry shows that they are very similar in terms of the structure of the elaborated

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[3]See: "Sozdaniye i Razvitiye Ob"yedineniy v Promyshlennosti," p 31.

indicate the percentage of centralized jobs, and this can be calculated as the ratio of the number of workers engaged in performing the given function in the management personnel of the association to the number of workers in the management personnel performing it in the personnel of the association and its production subdivisions.[4] This will make it possible to concretize the measures provided for in both types of plans to implement the economic operational independence of the primary economic units.

The elaboration of a schematic chart for the territorial placement of the production units also helps to more fully analyze the possibilities of centralizing functions in the production associations which include territorially distant enterprises. The Procedural Instructions on Elaborating the Technical and Economic Basis for Creating (Consolidating) a Production Association in effect in the Ukrainian Ministry of Light Industry recommend the compiling of charts as an appendix to the explanatory note of the plan (comprehensive plan) for the development of the association in the section devoted to the organizational structure of the production association. Obviously the preparation of schematic charts can be recommended not only in the sectors but also in the sector-wide materials of the USSR Gosplan on planning the organization and development of the production associations.

A clearer definition of the scope of centralized functions will also make it possible to improve the planning of changes in the number of management personnel in the association and its subunits. At present there still is a tendency for a not always valid increase in the number of association personnel at the expense of reducing this in the production units.

Calculating the reduction in expenditures on the support of management personnel caused by the centralization of production and economic functions is of important significance for determining the economic accountability effect. The given indicator has been recommended by the sectorial procedural instructions on compiling the comprehensive plans for the development of the production associations of the Ukrainian Ministry of Food Industry and has been calculated in the plans of many associations. Thus, the comprehensive development plan of the Dnepropetrovsk Association of Ukrkhlebprom [Ukrainian Bakery Industry] provides that by 1980 expenditures for the support of management personnel will be reduced by 124,200 rubles due to the centralization of functions. For the Donets Production Association of Ukrkhlebprom this indicator will be 44,000 rubles, for the Crimean Association 34,500, for the Odessa Association 32,000, and for the Khar'kov Association 47,000 rubles.

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[4]On the basis of the given indicator, the percentage of the centralization of functions has been calculated in the comprehensive development plan of the L'vov Vesna Garment Industry Production Association.

The reduction in the designated expenditures (as a whole as well as due to the centralization of functions) in the Kiev Bakery Industry Association is reflected in the table given below.

Indicator	1975	1976	1977	1978	1979	1980
Reduction in expenditures on support of management personnel, thousand rubles	14.0	43.2	19.7	5	5	5
Including: from centralization of functions, thousand rubles	12.9	36.0	16.3	4.6	4.6	4.6
In percent of total reduction	92.1	83.3	82.7	92.0	92.0	92.0

Obviously it would be advisable to incorporate the given indicator in the sector-wide recommendations on planning the organization and development of the associations.

The experience of the production associations in the Ukrainian food industry is of interest in organizing material incentives. On the basis of the sectorial procedural instructions in the comprehensive development plans, not only the total amounts of the economic incentive funds have been calculated for the years of the five-year plan, but also the structure of the material incentive fund in terms of areas of use and categories of employees. Many associations in this planning have also proceeded from the recommendations of the Vinnitsa Production Design Institute. In accord with this 50 percent of the material incentive fund to be distributed is allocated for current bonuses, 25 percent for remuneration for the results of the year, 10 percent for bonuses related to the socialist competition, 5 percent for one-shot commendation, 5 percent for one-shot aid, and 5 percent for paid vacations. The incorporation of indicators for the distribution of the material incentive fund in the general sectorial procedural recommendations would make it possible to subordinate material incentives to a greater degree to comprehensive planning, and to improve their organization over the long-range period.

For the purposes of improving the new function of centralized management, that is, planning measures in the area of economic accountability, the general sectorial procedural recommendations must make provision for questions which would be included in both types of the association development plans. In the area of economic operational independence, these would include: Analysis of the possibilities of centralization and determining the

percentage of centralizable jobs for each function in the event of their partial centralization, disclosing new management functions (here consideration is given to the type of production association, and the territorial placement of the enterprises comprising it); the distribution of the number of management workers between the association and its subdivisions, and reducing expenditures on the support of management personnel by centralizing the economic operational functions.

In the area of material incentives it would be desirable to incorporate in the recommendations indicators for not only the total amounts of the economic incentive funds, but also their distribution in terms of employee categories, and the elaboration of an optimum distribution structure for the sector.

However, not all the questions of organizing economic accountability included in the plans must be reflected in the comprehensive development plans of the production associations. In our view, within the development plans it is essential to provide for the following:

1) A procedure for the centralization and distribution of the planned and actually allocated amount of the economic incentive funds considering the material responsibility of the association units for violating obligations under internal cooperation;

2) Economic accountability indicators for evaluating the economic activities of the subunits;

3) A regulation governing the centralized material incentive fund of a production association;

4) A regulation governing the centralized fund for sociocultural measures and housing construction;

5) A regulation on the centralized production development fund;

6) A regulation governing claims, that is, a system of sanctions applied against a subdivision which has violated the internal cooperation conditions and has caused harm to the association or an individual subdivision of it;

7) General regulations on bonuses for managers, engineers, technicians, white collar personnel and workers (for the professions common to the enterprises comprising the association). In the given instance the following are required: Determining the categories and the range of employees covered by the bonus systems; the choice of the indicators and the conditions for structuring the bonus scale; the establishing of the sources of money for the bonuses.

There already is definite experience in working out the questions of organizing economic accountability incentives in the planning. Thus, a regulation governing the formation and expenditure of the centralized economic

incentive fund of the association and a regulation on the formation and expenditure of the association production development fund have been worked out in the materials for the development plans of the Zhitomirdrev [Zhitomir Lumber] Production Association of the Ukrainian Lumber and Woodworking Industry.

The coordinating of the structure of the indicators in the development plans of the associations and the management improvement plans helps to strengthen the comprehensive approach to the development of economic accountability. At present, the given problem has not been fully resolved. The quotas in the area of strengthening economic accountability in the procedural recommendations for the USSR ministries and departments and the Union republic gosplans to work out draft plans for improving management have been formulated as individual measures, and have not been generalized in an independent section or point. Also lacking are indicators which reflect the development of external and internal economic accountability relations. There is no coordinating of the indicators in the management improvement plans and the plans for the organization and development of the associations. The establishing of this would be aided by the introduction of the following uniform indicators: the proportional amount of product delivered under direct long-term ties (from 3 to 5 years) in the total volume of product sales, and the proportional amount of raw products, materials, semifinished products and supplied finished product obtained under direct long-term ties (from 3 to 5 years) in the total volume of product sales.

In many sectors it is difficult for the personnel of the associations to work out the plans. For the purposes of improving the quality of the plans, it is desirable, in following the experience of the USSR Ministry of Light and Food Machine Building, to assign their elaboration to the sectorial design institutes. It is also advisable to set up special subdivisions in the ministries concerned with the planning questions, for example, in the USSR Ministry of Tractor and Agricultural Machine Building. At the same time it is essential to strengthen the responsibility of the ministries and departments for carrying out the work on time and with high quality, and particularly for selecting the most efficient ways for the development of the associations.

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